# TRANSPORTATION SITE IMPACT HANDBOOK



2014 Edition

**Andrew Young** 

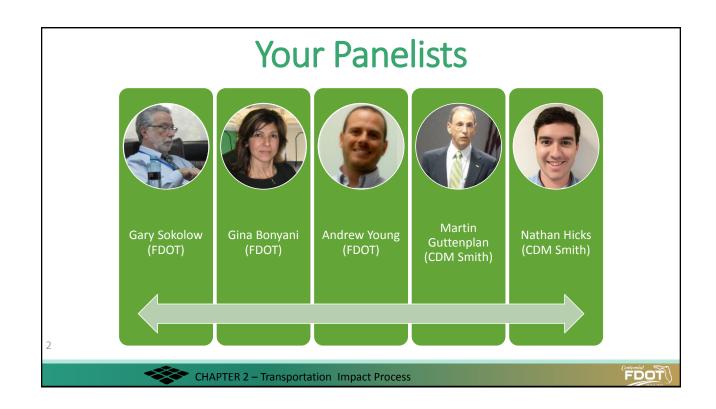
ESTIMATING THE TRANSPORTATION IMPACTS
OF GROWTH

Session 2 (Chapter 2 - Part 2)

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CHAPTER 2 – Transportation Impact Process

FDOT



# **Common Questions**

You will get a copy of the presentation in a day or two

- 1.5 CM Credits #30785
- 1.5 PDH Credits

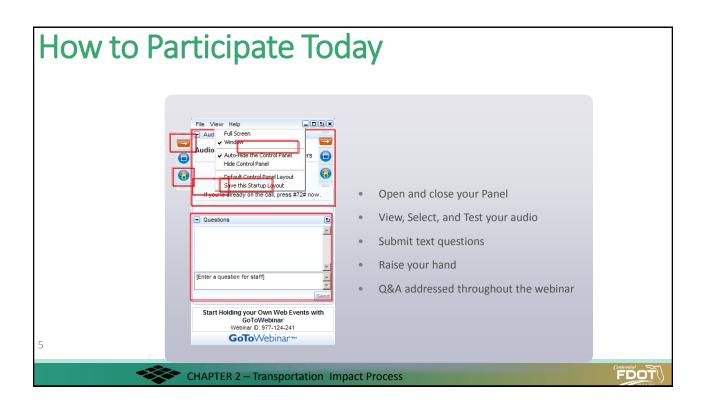
There will be a recording (no credit however)

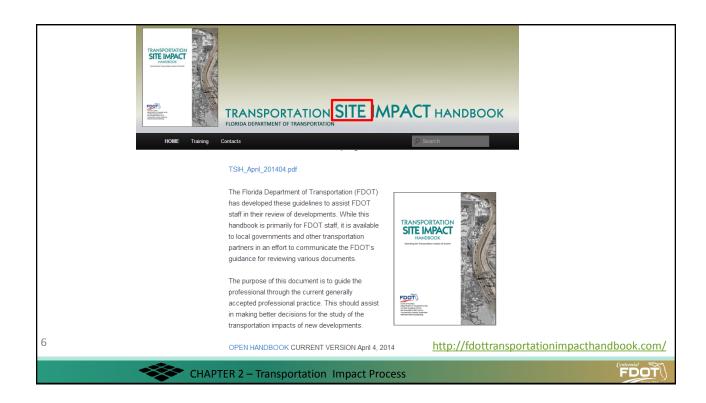
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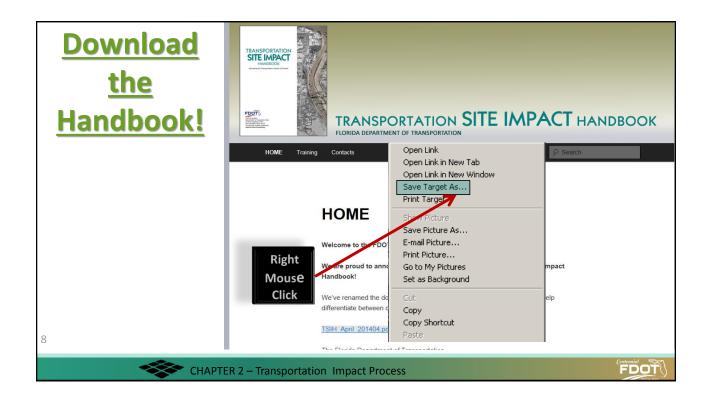


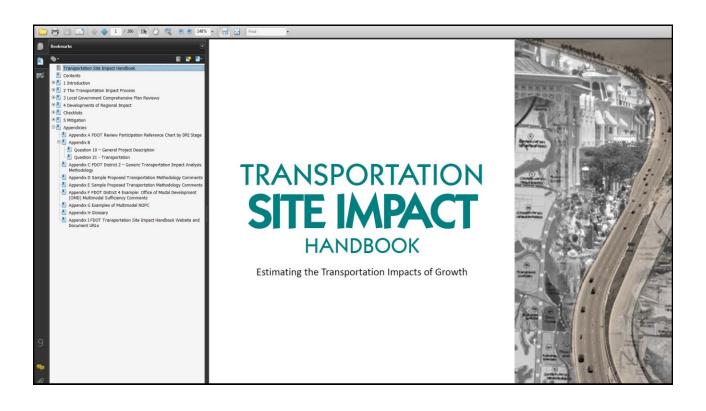


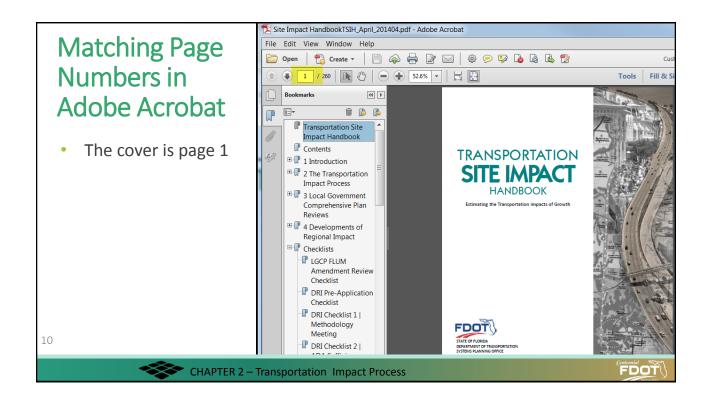


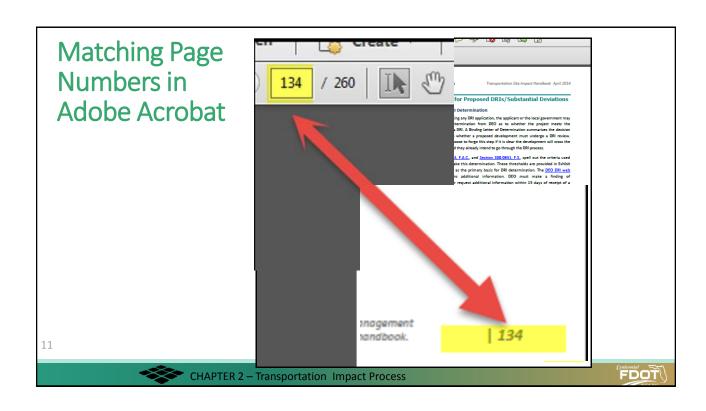


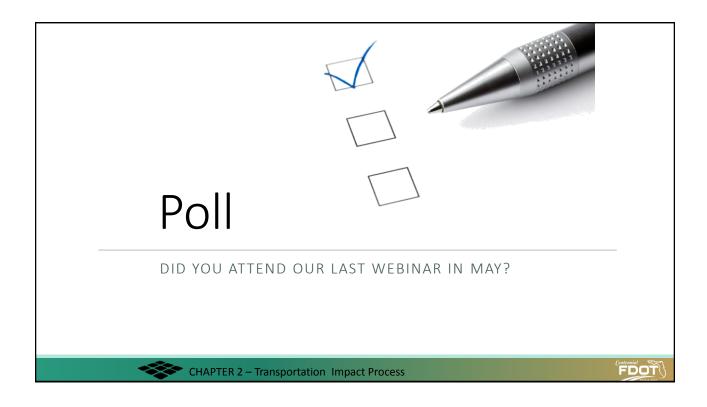


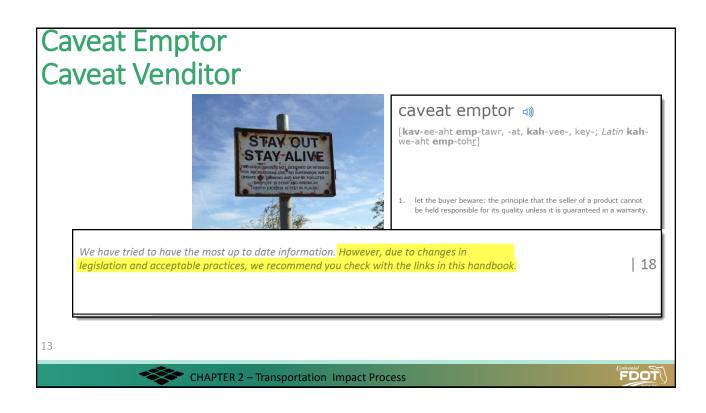


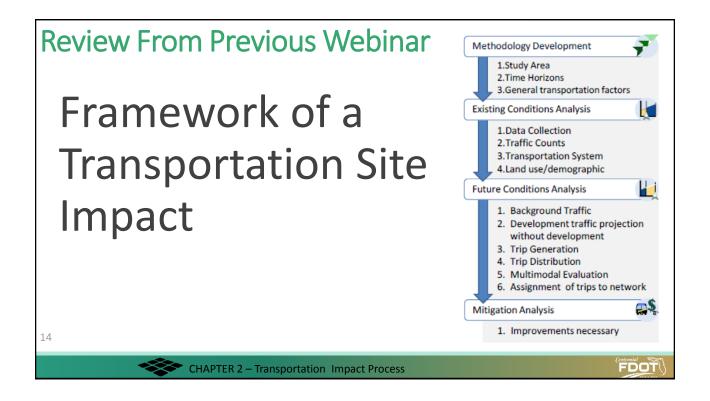


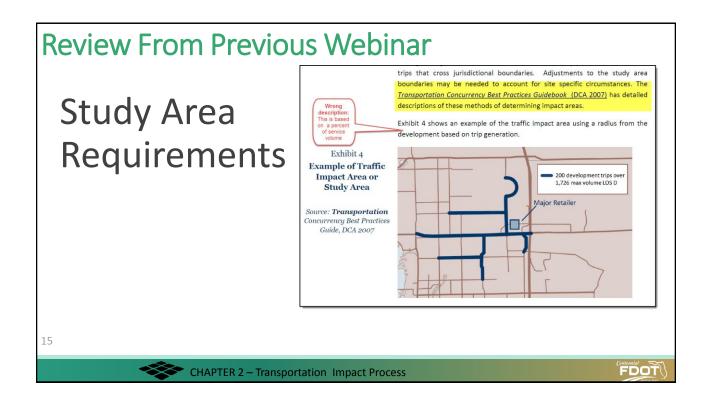


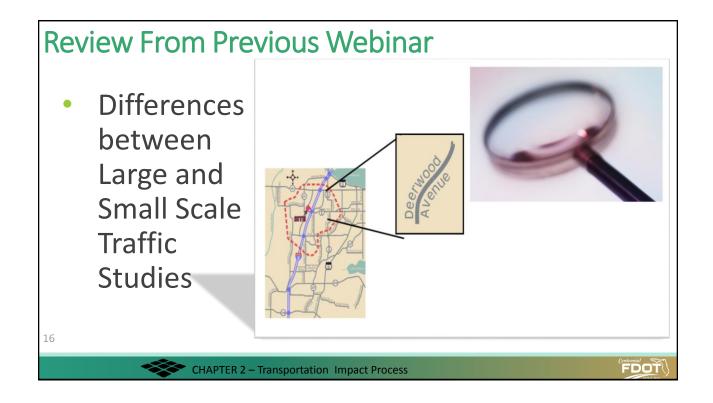


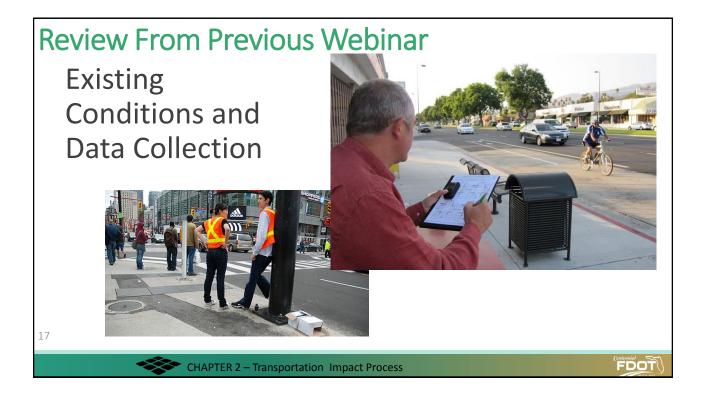












# Where to get material and recordings of last presentations

# Access Management/Site Impact YouTube Channel

https://www.youtube.com/channel/UCFeGexoGtxGsPhyrQ BgkjA



# Florida DOT Site Impact Handbook Overview

by Gary Sokolow 1 month ago • 10 views

Source: https://youtu.be/CtIrrGjOfOc

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# Where to get material and recordings of last presentations

# Access Management/Site Impact YouTube Channel

https://www.youtube.com/channel/UCFeGexoGtxGsPhyrQ BgkjA



# Florida Transportation Site Impact Handbook Webinar Series Chapter 2 part 1

by Gary Sokolow 3 weeks ago • 18 views

This is a recording of our second webinar in the transportation site impact handbook webinar series it covers part of chapter ...

Source: <a href="https://youtu.be/CtIrrGjOf0c">https://youtu.be/CtIrrGjOf0c</a>

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**CHAPTER 2 – Transportation Impact Process** 

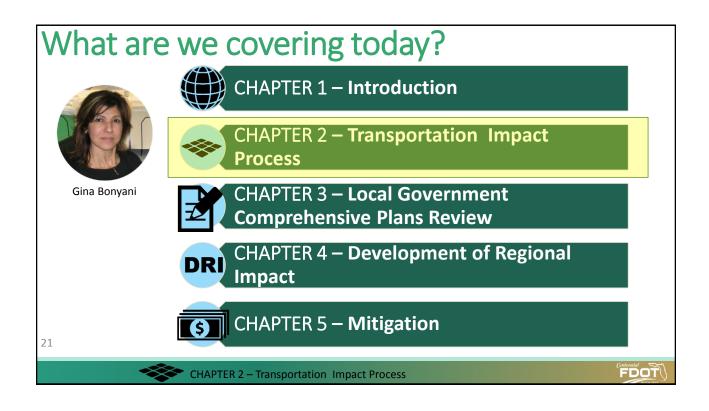


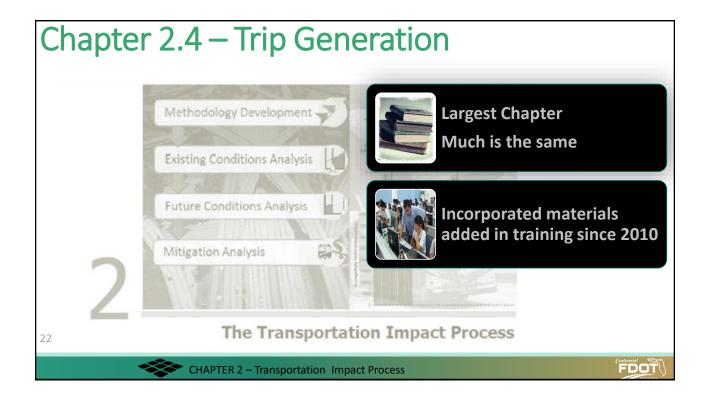
# Questions?

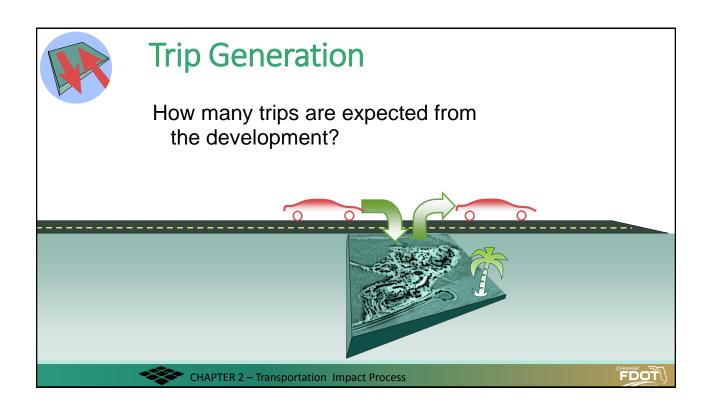


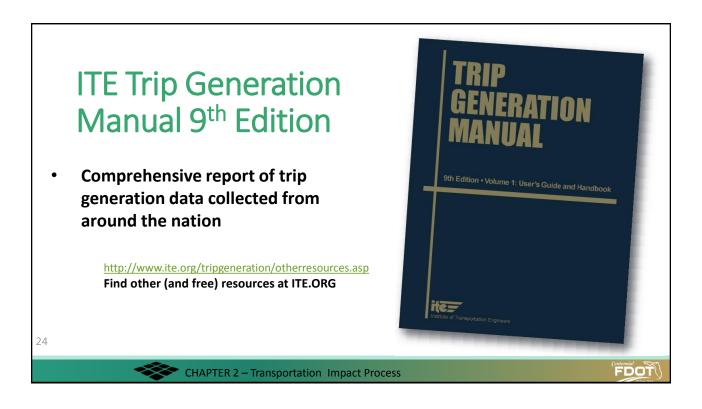
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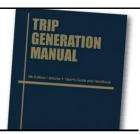












Title	Publication Date	Member/ Non-Member Price
Trip Generation Handbook, 3rd Edition	August 2014	\$ 50.00/ \$ 93.75
Trip Generation Manual, 9th Edition	September 2012	\$ 325.00/ \$ 500.00
Transportation Impact Analyses for Site Development	September 2010	\$ 35.00/ \$ 43.75
Parking Generation, 4th Edition	July 2010	\$ 95.00/ \$ 118.75
Trip Generation, 8th Edition	January 2008	\$ 275.00/ \$ 412.50

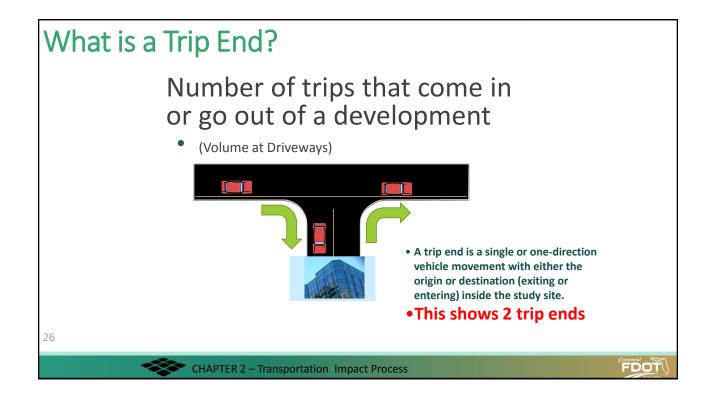
http://ecommerce.ite.org/IMIS/ItemDetail?iProductCode=IR-016G

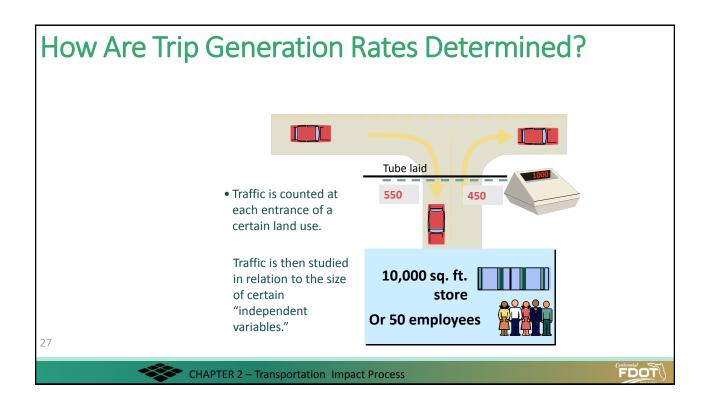
Where to buy the 9th Edition

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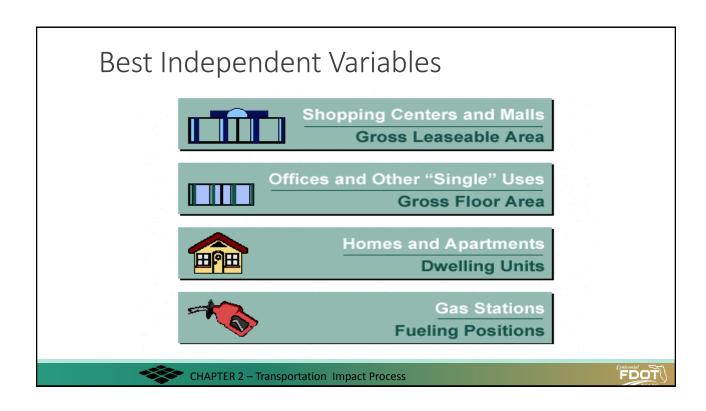




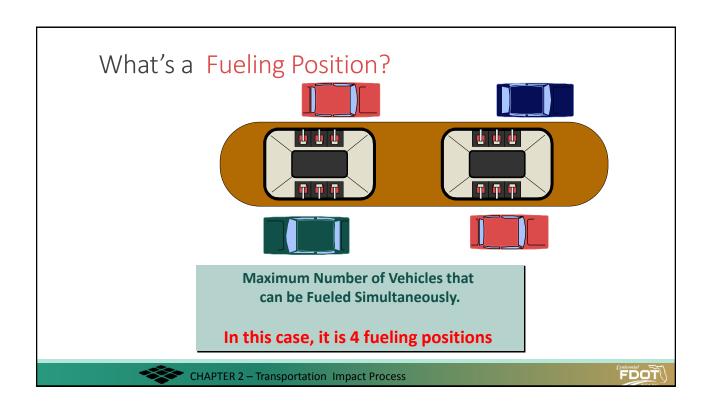


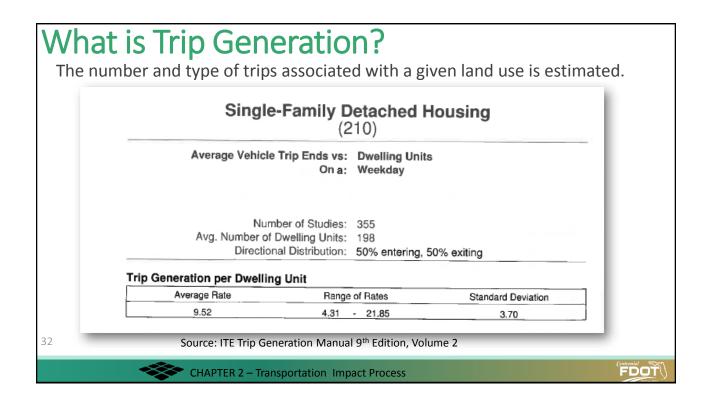


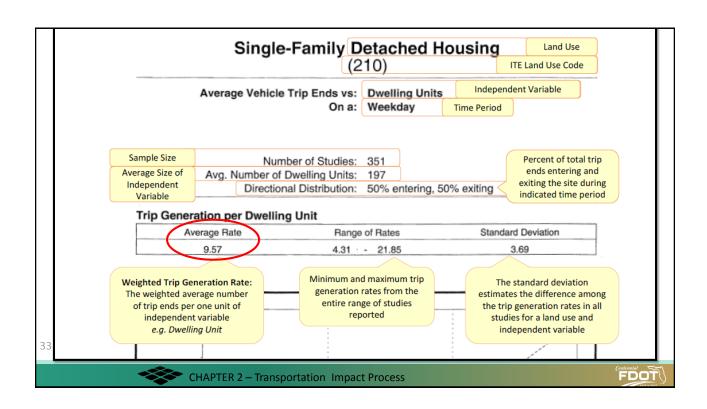


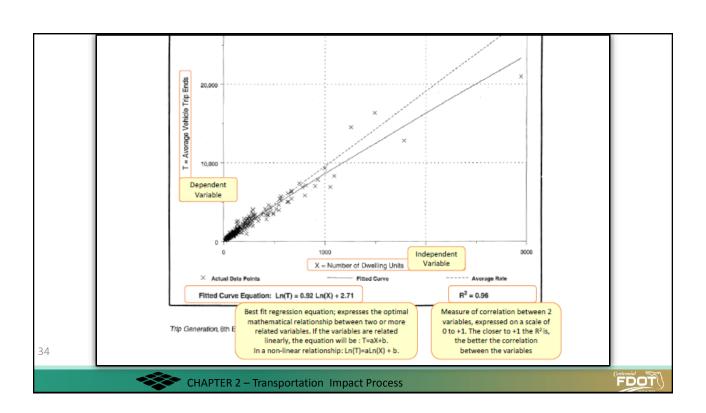












# The Descriptions Are Critical to a Good Study

# Land Use: 820 Shopping Center

### Description

A shopping center is an integrated group of commercial establishments that is planned, developed, owned and managed as a unit. A shopping center's composition is related to its market area in terms of size, location and type of store. A shopping center also provides on-site parking facilities sufficient to serve its own parking demands. Specialty retail center (Land Use 814) and factory outlet center (Land Use 823) are related uses.

### **Additional Data**

Shopping centers, including neighborhood centers, community centers, regional centers and super regional centers, were surveyed for this land use. Some of these centers contained non-merchandising facilities, such as office buildings, movie theaters, restaurants, post offices, banks, health clubs and recreational facilities (for example, ice skating rinks or indoor miniature golf courses). The centers ranged in size from 1,700 to 2.2 million square feet of gross leasable area (GLA). The centers studied were located in suburban areas throughout the United States and therefore represent typical U.S. suburban conditions.

Many shopping centers, in addition to the integrated unit of shops in one building or enclosed around a mall, include outparcels (peripheral buildings or pads located on the perimeter of the center adjacent to the streets and major access points). These buildings are typically drive-in banks, retail stores, restaurants, or small offices. Although the data herein do not indicate which of the centers studied included peripheral buildings, it can be assumed that some of the data show their effect.

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CHAPTER 2 - Transportation Impact Process



# Simple Trip Generation Example

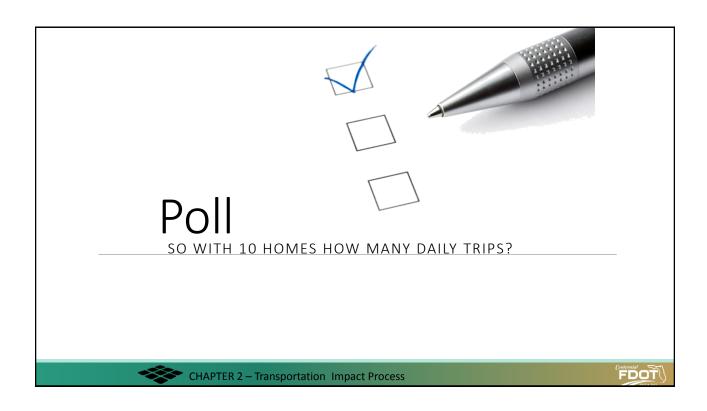
- 10 = Homes being built
  - (called "Dwelling Units" or DUs)
  - Homes are the "Independent Variable"
- 10 = Daily Trip Generation Rate for a Single Family Home

How many daily trips do we project?

36







# Simple Trip Generation Example

10 = Homes being built

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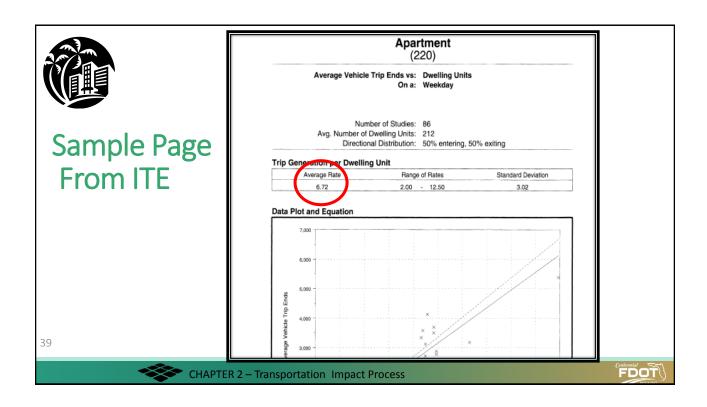
How many daily trips do we project?

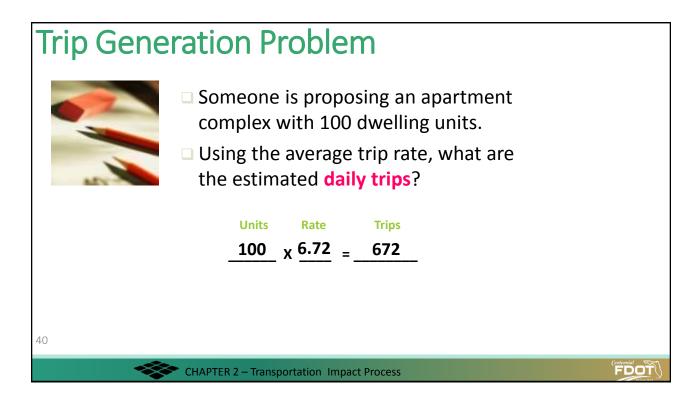
10 DUs X 10 Trips/DU = 100 Trip ends total estimated

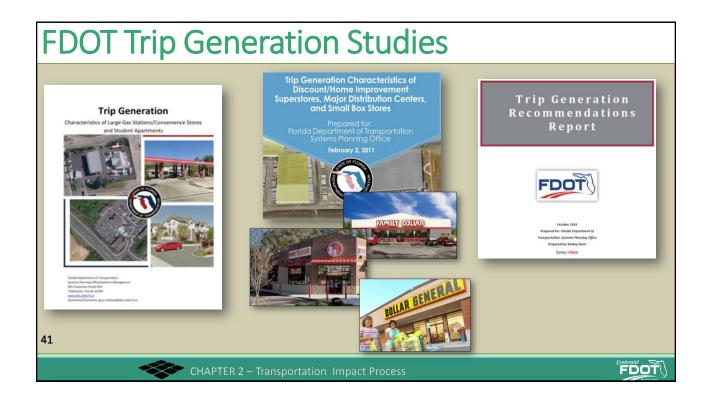
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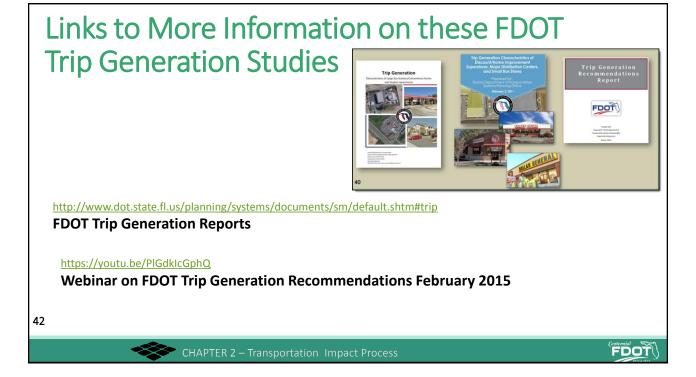


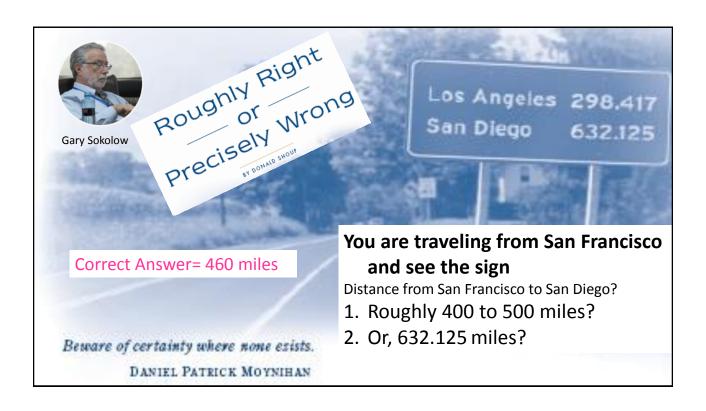
(entennial FDOT)











# Certain Restrictions May Apply to the Use of the Manual

- Missing/neo-traditional land uses
- Still most data has been collected from suburbs with free parking and little transit
- Old data

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# What to do with unusual land uses

- Speak with reviewing agencies and ask about precedents (we don't know of all the studies)
- Use trip generation characteristics based on similar land uses

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CHAPTER 2 - Transportation Impact Process



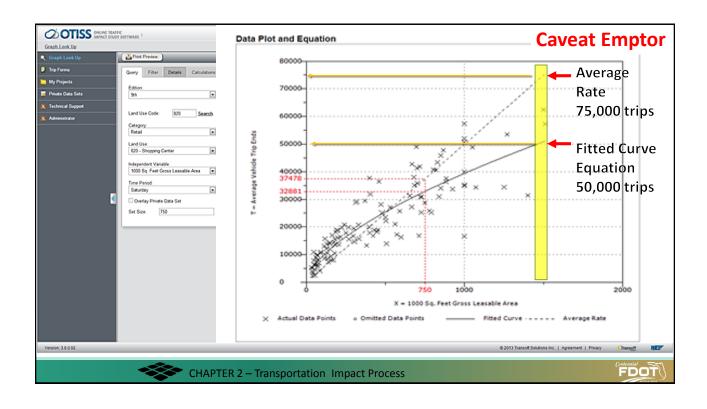
# Trip Generation Rates v. Equations

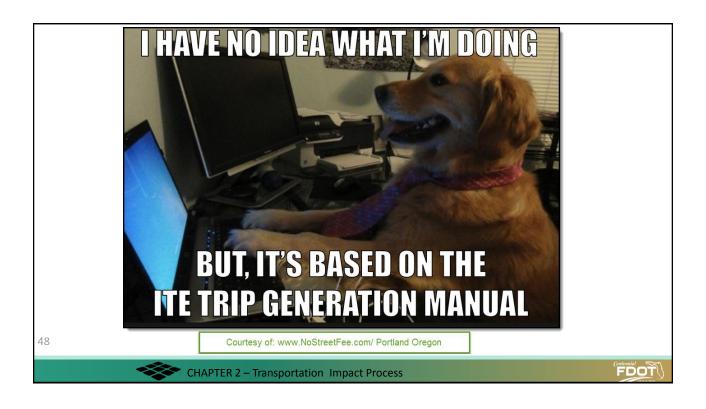
- ITE provides average trip generation rates for each land use and equations when the ITE editors thought there was sufficient data
- HOWEVER, think critically

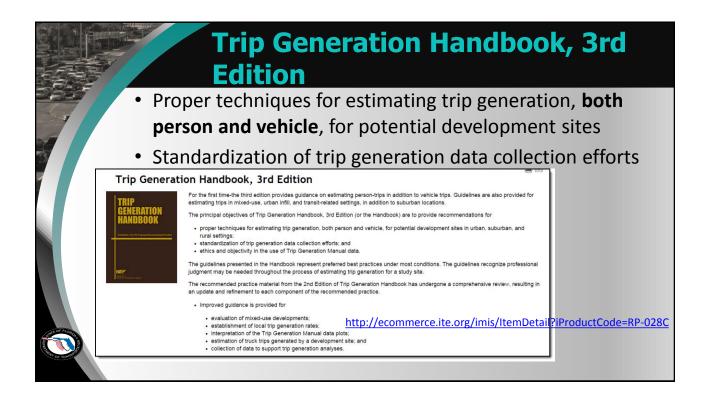
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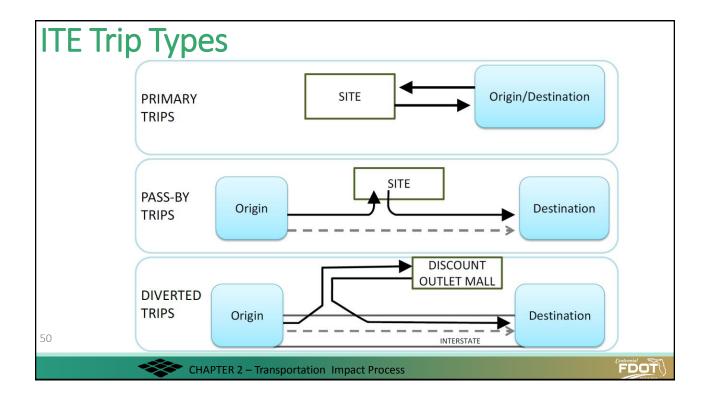




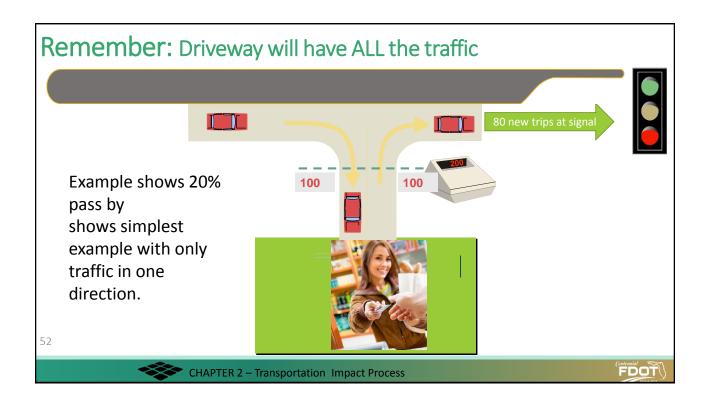












# **Pass-By Trips**

# Applies only to retail-oriented land uses

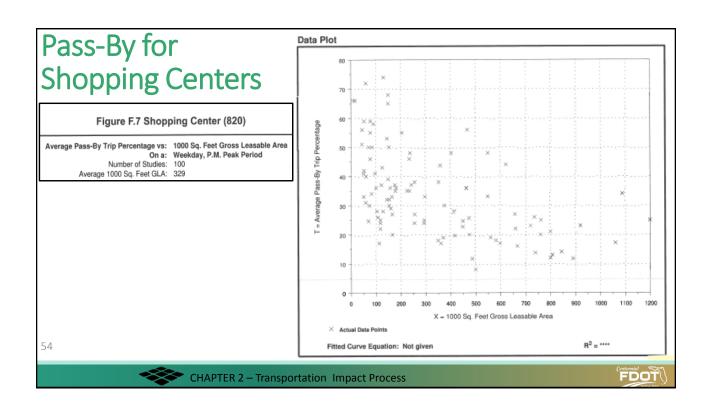
- Shopping centers
- · Convenience markets
- Gas stations
- Fast-food restaurants
- Drive-in banks



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# Pass-By Reasonableness Checks

Standard Process | 2.4 Trip Generation

Transportation Site Impact Handbook April 2014

## 2.4.4 Explanation of the 10 Percent of the Adjacent Street Traffic

Final pass-by trips are estimated following trip assignment when the number of pass-by trips considered can be compared with the total traffic on the facility. Proper application of pass-by trips requires that the following check for a reasonableness or "common sense" check, involving a comparison of the number of pass-by trips and assuring that they do not exceed 10 percent of the adjacent street traffic volume during the peak hour. Explanation is provided in the next section.

The number of pass-by trips should not exceed **10 percent** of the **adjacent** street traffic during peak hour

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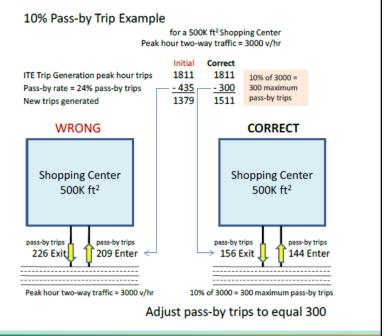
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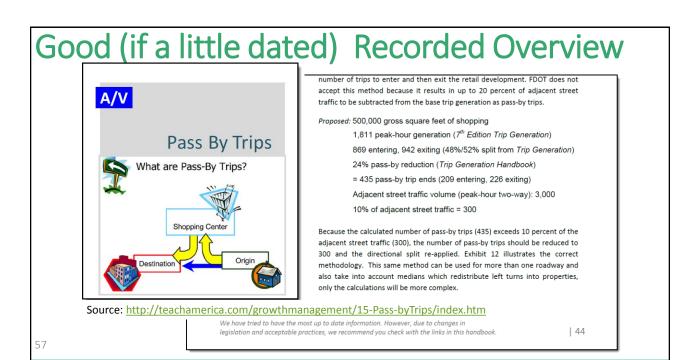


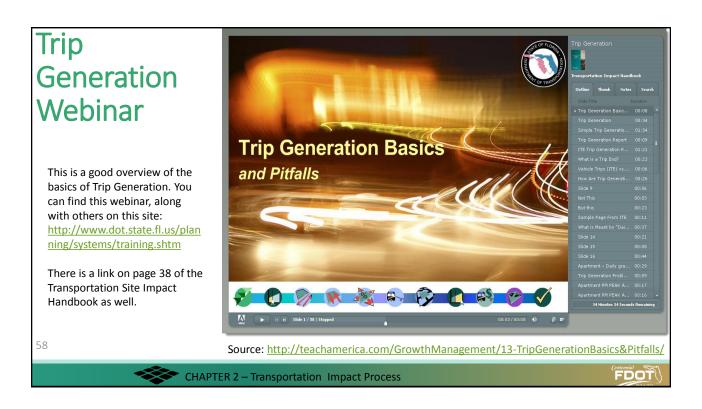


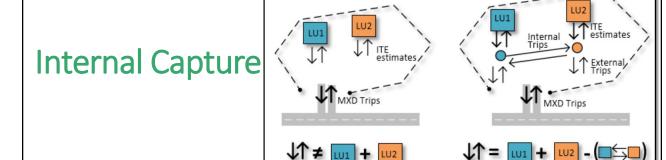
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The amount of traffic that is captured in a mixed development. This varies based on the location, mix of land uses and size.

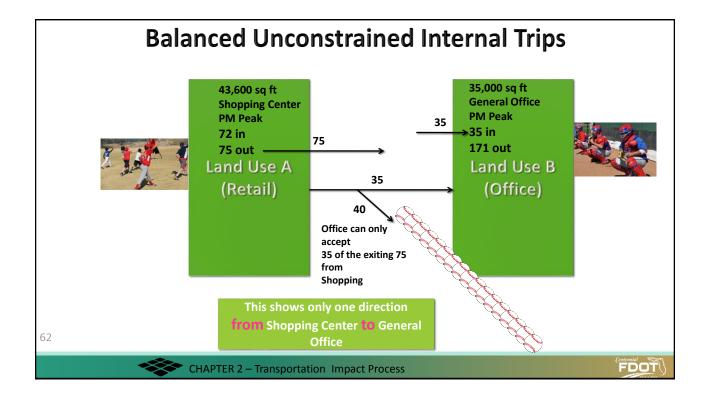


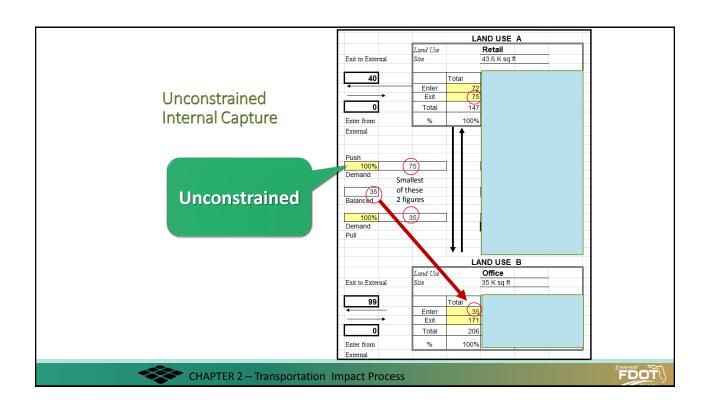
CHAPTER 2 – Transportation Impact Process

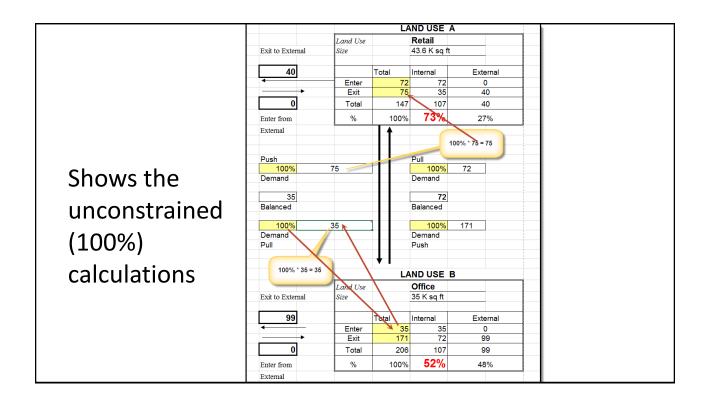


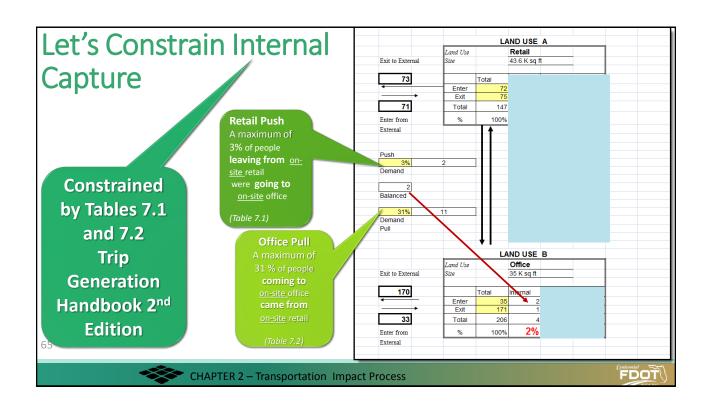
# Internal Capture ITE Trip Generation Handbook 2nd Edition 2004 Three Land Uses Recognized • Shopping • Housing • Office CHAPTER 2 – Transportation Impact Process

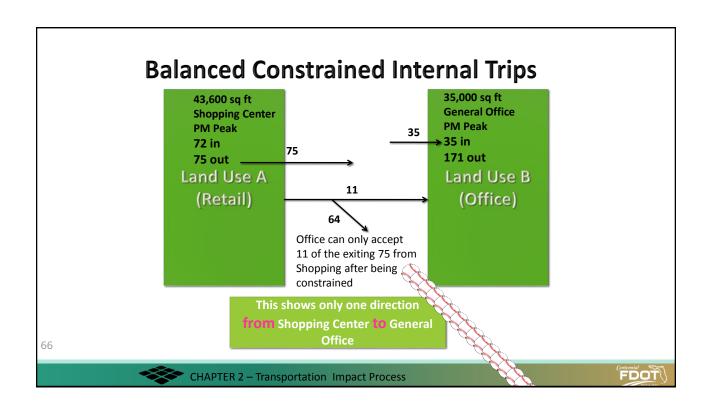


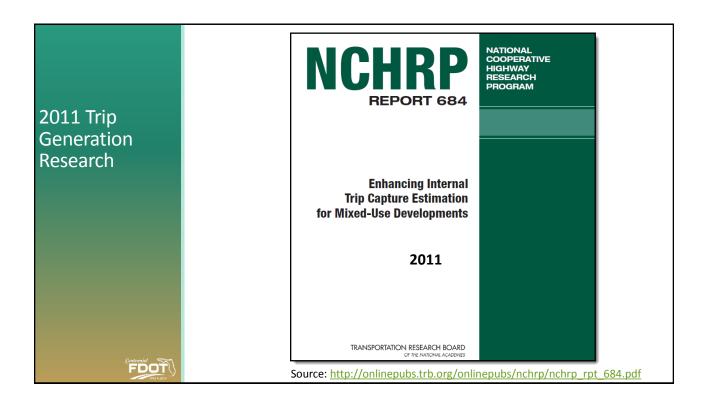






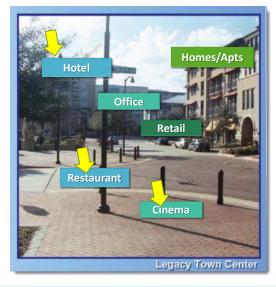






# What Did The NCHRP Project Try To Improve On?

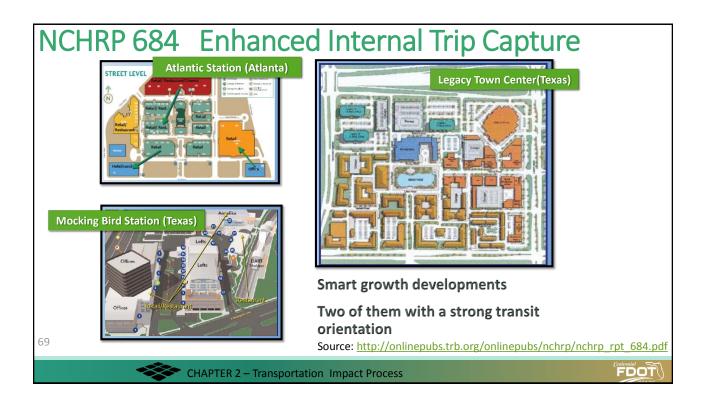
- More data
- Proximity between the uses
- Smart growth impacts
- Number of land uses
  - From 3 to 6 land uses
- Includes spreadsheet for calculations



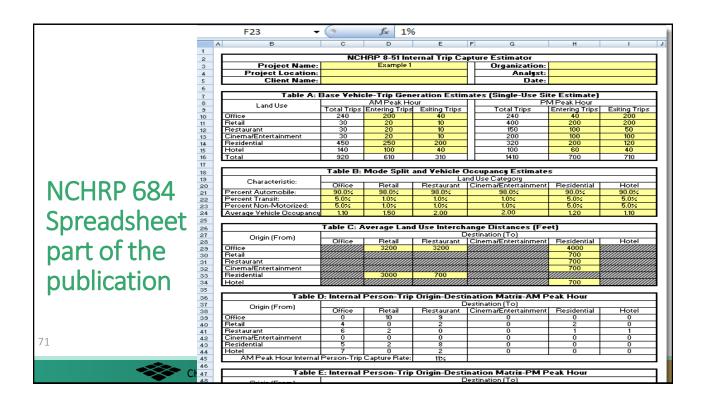
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	origins within a mixed-use developmen			within a	Weekday Peak Hou		
Land-Use Pairs	Land-Use Pairs		p.m.	Land-Use Pairs		a.m. p.m.	
	To Office				From Office		-
	To Retail	28%	20%	To OFFICE	From Retail	32%	8%
	To Restaurant	63%	4%		From Restaurant	23%	2%
From OFFICE	To Cinema/Entertainment		0%		From Cinema/Entertainment	2,370	196
	To Residential	1%	2%			001	
	To Hotel	0%	0%		From Residential	0%	4%
	To Office	29%	2%		From Hotel	0%	0%
	To Retail	29%	2%		From Office	4%	31%
		From Retail					
From RETAIL	To Restaurant	13%	29%	To RETAIL	From Restaurant	50%	29%
	To Cinema/Entertainment		4%		From Cinema/Entertainment		26%
	To Residential 14% 26%		From Residential	2%	46%		
	To Hotel	0%	5%		From Hotel	0%	17%
	To Office	31%	3%		From Office	14%	30%
	To Retail	14%	41%		From Retail	8%	50%
From RESTAURANT	To Restaurant			To RESTAURANT	From Restaurant		
From RESTAURAINT	To Cinema/Entertainment		8%		From Cinema/Entertainment		32%
	To Residential	4%	18%		From Residential	5%	16%
	To Hotel	3%	7%		From Hotel	4%	71%
	To Office		2%		From Office		6%
	To Retail		21%		From Retail		4%
	To Restaurant		31%	To CINEMA/ENTERTAINMENT	From Restaurant		3%
From CINEMA/ENTERTAL	To Cinema/Entertainment		0170		From Cinema/Entertainment		010
	To Residential		8%		From Residential		4%
	To Hotel		2%		From Hotel		1%
	To Office	2%	4%		From Office	3%	57%
	To Retail	1%	42%		From Retail	17%	10%
	To Restaurant	20%	21%		From Restaurant	20%	14%
From RESIDENTIAL	To Cinema/Entertainment	2070	0%	To RESIDENTIAL	From Cinema/Entertainment	2070	096
	To Residential		U%		From Residential		U%
	To Hotel	00/	20/		From Hotel	0%	100/
		0%	3%		From Office	3%	12%
	To Office	75%	0%				
	To Retail	14%	16%		From Retail	4%	2%
From HOTEL	To Restaurant	9%	68%	To HOTEL	From Restaurant	6%	5%
	To Cinema/Entertainment		0%		From Cinema/Entertainment		0%
	To Residential	0%	2%		From Residential	0%	0%
	To Hotel		1 7		From Hotel		1





For the first time-the third edition provides guidance on estimating person-trips in addition to vehicle trips. Guidelines are also provided for estimating trips in mixed-use, urban infill, and transit-related settings, in addition to suburban locations.

The principal objectives of Trip Generation Handbook, 3rd Edition (or the Handbook) are to provide recommendations for

- proper techniques for estimating trip generation, both person and vehicle, for potential development sites in urban, suburban, and rural settings;
- standardization of trip generation data collection efforts; and
- · ethics and objectivity in the use of Trip Generation Manual data.

The guidelines presented in the Handbook represent preferred best practices under most conditions. The guidelines recognize professional judgment may be needed throughout the process of estimating trip generation for a study site.

The recommended practice material from the 2nd Edition of Trip Generation Handbook has undergone a comprehensive review, resulting in an update and refinement to each component of the recommended practice.

- Improved guidance is provided for <a href="http://ecommerce.ite.org/imis/ItemDetail?iProductCode=RP-028C">http://ecommerce.ite.org/imis/ItemDetail?iProductCode=RP-028C</a>
  - · evaluation of mixed-use developments;
  - · establishment of local trip generation rates;
  - interpretation of the Trip Generation Manual data plots;
  - estimation of truck trips generated by a development site; and
  - collection of data to support trip generation analyses.



# **Important Considerations**

May not be covered well enough in written guidance

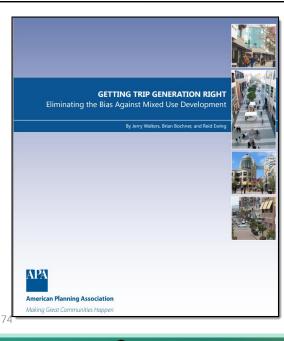
- Level of isolation/competing origins and destinations
- Site design/linkages between land uses
- Income Level / on-site employment
- Maturity of the development (consider early phases)

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CHAPTER 2 - Transportation Impact Process





# Ongoing Professional Debate

The latest MXD research shows that traffic studies overestimate impacts of mixed-use development by 35%. The new MXD+ 2.0 analysis tool corrects those errors, as described in the American Planning Association planning advisory, "Getting Trip Generation Right: Eliminating the Bias Against Mixed-Use Development".

http://www2.epa.gov/smart-growth/mixed-use-trip-generation-model

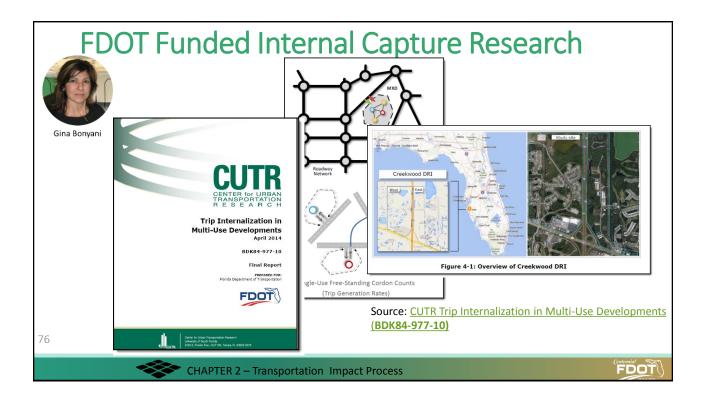
# **Ongoing Professional Debate**



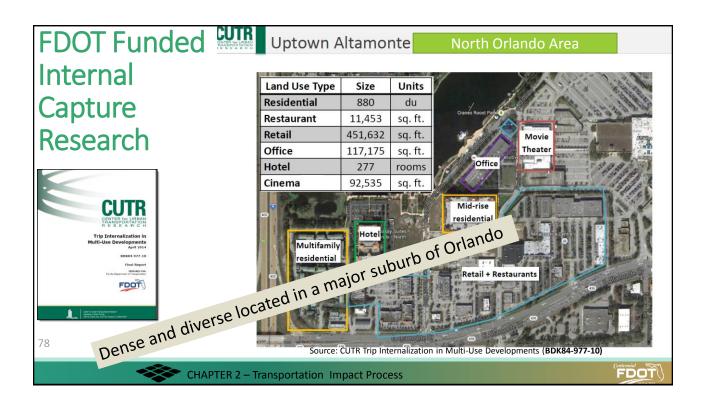


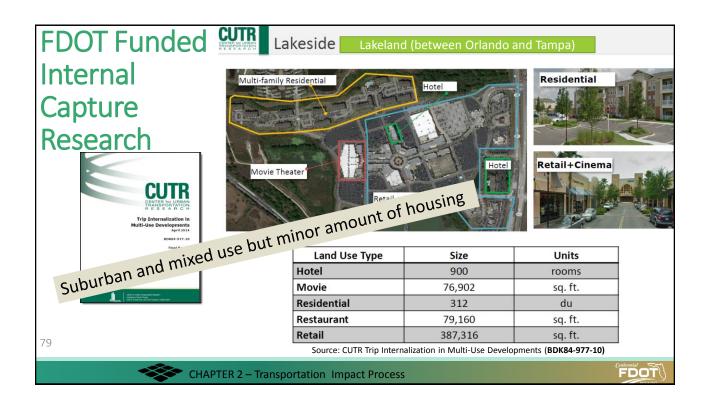




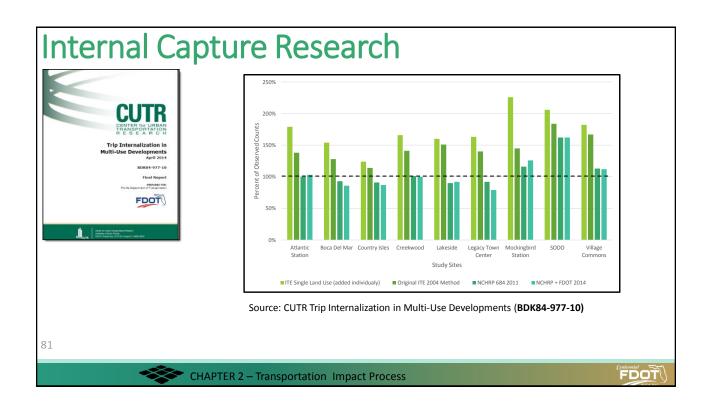














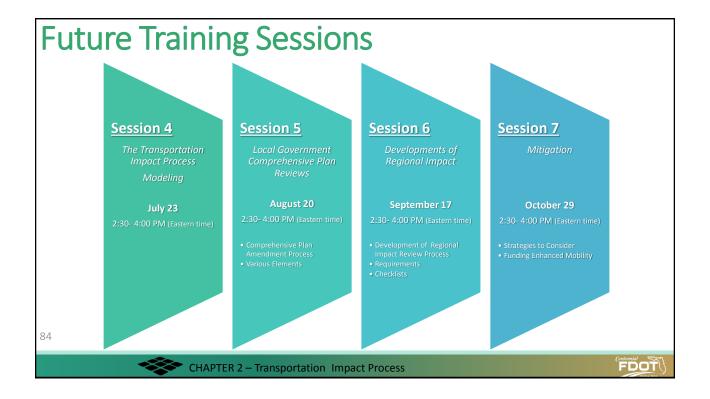
# **Next Webinar**

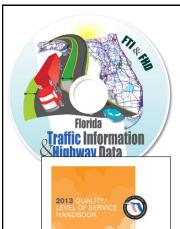
Use of large scale regional transportation models

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# **Great Free Resources**

- **Systems Planning Trainings**
- Quality/Level of Service Handbook
- Median Handbook
- Traffic Analysis Handbook
- Interchange Access Request User's Guide
- Project Traffic Forecasting Handbook
- Driveway Information Guide
- Florida Transportation Information DVD
- FDOT FTI App (iOS)
- Florida Traffic Online
- Transportal.org



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